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By-Painter, Genevieve

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Since educational deficiencies do exist in disadvantaged children, the emphasis should be on prevention so that compensation need not play the major role it does today. Preschool programs are being effected in primary schools, nursery schools, community centers, and even private homes. The controversy is no longer whether or not such programs can help preclude developmental deficits. It is whether the programs should be child-centered or have a uniform, structured curriculum. This paper is intended to present a rationale for the structure of infant education to be used by teachers, paraprofessionals, and parents. Emphasis should be on language and conceptual development, because disadvantaged children appear particularly deficient in these areas. The child should be 10 to 12 months old when the program is initiated. Suggestions for the training of the infant in language and conceptual tasks and activities are presented after a brief discussion of the rationale for the use of such activities. (WD)

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A Rationale for a Structured Educational Program and Suggested Activities for Culturally Disadvantaged Infants*

by
Genevieve Painter

University of Illinois
Urbana, Illinois

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A Rationale for a Structured Educational Program and Suggested Activities for Culturally Disadvantaged Infants

by
Genevieve Painter, Ed. D.

It is generally agreed that slum children are not being educated to take their places as contributing members of society. This is not only a social but a personal loss as well. Comparisons of infants from differing cultural backgrounds generally reveal no developmental differences; however, developmental deficits are well established in children from culturally disadvantaged families by the age of three (Bayley, 1965; Pasamanick and Knoblock, 1961). The precise stage during which learning experiences will be unusually effective and influential on later behavior patterns is yet to be defined; however, research suggests that the earlier intervention begins, the greater are the gains which occur (Bloom, 1964; Kirk, 1964). The question of whether or not preschool experience can help to eliminate developmental deficits is no longer seriously debated; the controversy now focuses on the defenders of the traditional or child-centered nursery school program and the proponents of a structured preschool curriculum. Early reports of research projects involving curriculum innovation seem to indicate that the structured curriculum effects the more pertinent changes in the development of disadvantaged preschool children (Weikart, 1967; Karnes et al., 1966).

It seems obvious that the emphasis should be on the prevention of educational deficits rather than the compensation for deficits which inadvertently developed; and therefore, interest in the education of infants is increasing at a phenomenal rate. Research and service organizations are attempting to educate infants in their homes, in community centers, and in day care centers, as well as to teach groups of mothers to educate their own infants. School systems are accepting responsibility for education at all levels and are now including preschool programs for four-year-olds and are seeking to implement programs within other community facilities and within the home starting at birth and involving

the help of public health nurses, social workers, and other professionals as well as para-professionals. Much has been written describing the spontaneous intellectual growth of infants (Gesell, 1940; Piaget, 1963), but little can be found concerning either efforts or theories relative to consciously sought and planned acceleration of growth. In answer to the question, "What shall we teach?", this paper presents a rationale for the structure of infant education and suggestions for appropriate activities.[1] It is the belief of the writer that these suggestions can be used by professional teachers, para-professionals, and parents. Although the instructions are generally stated for a teacher with limited time, they can be adapted to a home setting with the mother playing her natural role as teacher. In that case, teaching sessions could be of shorter duration and repeated during the day.

The rationale must be built primarily upon studies of children of elementary school age since little is found in the literature on the acceleration of infant growth. Two major areas of emphasis in this rationale are Language Development and Conceptual Development because culturally disadvantaged children have generally been found to perform at a lower level than their advantaged peers in these areas. A third area, Sensory-Motor Training, is effective as a training technique. Culturally disadvantaged infants are not usually found to be deficient in motor development; however; since fine-motor skills are beginning to emerge, and since infants learn through sensory input, teaching should utilize sensory-motor training to facilitate the development of concepts and language. Visual, auditory, tactual, kinesthetic, olfactory, and gustatory modalities should be stressed independently and in combinations

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[1]The rationale and suggested activities have been successfully employed in several research programs: (1) a home tutorial program for teaching culturally disadvantaged infants (Painter, 1967), and (2) a group demonstration and discussion approach for training the mothers of infants to teach their own infants, University of Illinois, directed by Dr. Merle B. Karnes, in process.

in various activities. The infants should be encouraged to give both verbal and motor responses. An appropriate age for the initiation of this type of intervention is between ten and twelve months; earlier training is not considered in this discussion because of the absence of speech development.

Rational for Language Training

Bereiter and Engelmann (1966) postulate that the disadvantaged child masters a language that is adequate to meet his social and material needs, but that is not adequate to transmit information and to carry on verbal reasoning. Deutsch (1964) suggests that a "cumulative deficit phenomenon" occurs in the area of language development between the first and the fifth grade years in the disadvantaged child and that such a phenomenon seems to be more pronounced for Negro children. Even young children, ages eighteen to thirty months, differ in number of sound types produced. Children in higher socio-economic groups produced a greater number of differing sounds and added new sounds at a higher rate (Irwin, 1948a and b). Spicker, et al. (1966) observed language behavior as one of the most serious and pervasive psychoeducational disabilities among the preschool and kindergarten children in their study. The majority of the children were able to communicate their needs and to carry out simple verbal instructions, but many displayed gross inability to cope with elaborative language. Karnes, et al (1966) also report communication and psycholinguistic problems in the disadvantaged preschool children in their study.

Controlling one's actions through one's own words is a necessary step toward the mastery of dialectical reasoning (Luria, 1961; Vygotsky, 1962). Bereiter and Engelmann (1966) point out that information may be accumulated and used by controlling verbal behavior through an "internal dialogue" which

differs from the social uses of language and may be the very core of verbal intelligence. They postulate that culturally disadvantaged children lack the most rudimentary forms of constructive dialogue and are therefore cut down at the basis of academic aptitude, the ability to have internal control of language to maneuver the sequential steps necessary for problem solving.

Suggestions for Language Training

Language development should be encouraged in all play activities. When the infant is given manipulative materials, the teacher should emphasize appropriate words or sounds as well as those which evolve naturally during the teaching session. For example, if plans are made to play with a ball, the teacher should plan to use sounds and words which she knows the infant might be able to imitate such as, "whee," "zoom," "ball," "roll." In addition, when the infant is actually playing, those sounds which evolve naturally such as "oh, oh," should be said by the teacher with the hope that the infant will imitate. The tutor should imitate the infant's speech in order to set a pattern of imitation as fun and play.

In addition to the encouragement of speech in all activities, the following structured language program is suggested: (1) beginning language, (2) elaborative language, (3) the breaking down of "giant word units," and (4) the encouragement of internal dialogue. Each child's language program should be initiated at his own level of development. It is suggested that the teacher sample tasks at each level with the child and begin training at the point where he is unable to perform. The non-verbal child, of course, would be encourage to imitate babbling.

Beginning language may be taught as follows: (1) The infant who does little babbling or who speaks few words should be taught to imitate the teacher's

vocal sounds. Imitate the sounds the infant produces spontaneously, making it seem like a game which is fun to play so that the infant will again make the sound. Then, say a new sound trying to initiate imitation on the part of the infant. (2) Show the infant objects found in his environment and encourage him to repeat their names. (3) Show the infant pictures in a book and ask him to point to various items, e.g. "Where is the dog?" (4) Ask him to say the name of a pictured object, e.g., "What is this?" (5) Tell the infant to demonstrate the use of a pictured object, e.g., "What do we do with a spoon? Show me." (6) When an infant is able to talk, discourage gestures or grunting by telling him how to ask for an item. Do not give it to him unless he says the word or words. If he is able to say "wah-wah" for water this should be accepted, but when he is able to say "water" he should be expected to say it precisely. Still later, when he is able to combine words, he should be told to say, "I want water." (7) Although the infant should be shown what to do through teacher demonstrations, he should also be expected to follow verbal instructions, such as, "Put the toy back in the box."

Elaborative Language should be encouraged in the following ways: (1) Use dramatic play, rhymes, and songs to develop the extension and spontaneity of speech. (2) Use adjectives and adverbs and ask the child to repeat, e.g., "This is a blue car. The car goes fast." (3) Objects, paper doll cut-outs, and parts of the body may be used to teach prepositions, e.g., "Put the penny in your hand, under your foot, between the mother and father doll." (4) Many teaching devices can be used to teach antonyms, e.g., "warm-cold" milk, "opened-closed" box, "long-short" pretzel sticks.

The breaking down of "giant-word units" as suggested by Bereiter and Engelmann (1966) should be encouraged. The child who says, "Tha-ha" should be

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encouraged to say "That hat," or "That is a hat" depending upon his level of speech development.

Internal dialogue should be encouraged. Manipulative activities which require time to observe a problem and to plan for a solution should be verbalized for the child. Encourage the child to repeat this dialogue, then to whisper it, and then to say it silently while working. For example, in working a puzzle, tell the child, "We start at the head; turn the piece around until it will fit." As he repeats the manipulation, he should be told to whisper the pattern and then to say it to himself.

Rationale for Conceptual Training

Research has emphasized the relationship between language and conceptual development. Concept formation apparently does not await the learning of names or labels, and language development serves to facilitate a process already begun on the non-symbolic level. Yet the power of language in advancing conceptualization cannot be minimized. Providing a name or nonsense syllable for a number of objects will increase a child's tendency to respond similarly to each of the objects; conversely, providing different labels for different objects will increase the tendency to respond variously (Spiker, 1956). Representation by a language symbol constitutes the final step in concept formation. Rudimentary concept formation takes place at the prelinguistic level but is limited to relatively concrete situations. The process of generalization is facilitated if a concept can be subsumed under a verbal symbol (Ausubel, 1958). Prehm (1965) found that verbal pretraining had a significantly positive effect on the conceptual performance of culturally disadvantaged children and that the use of verbal labels may have made the visual stimuli which he used more meaningful. He suggests that these children be given increased language experience in the

preschool years, especially practice in the use of verbal cues in the solution of problems.

Martin and Stendler (1959) write that formal education is largely a process of teaching concepts. It is presumed that the conceptual process involves both the differentiation of impressions which are originally diffuse and the integration of impressions which are originally detailed and fragmentary. Abstraction, discrimination, and generalization are utilized at all age levels. Older children and adults arrive at concepts both inductively, from the particular to the general, and deductively, from the general to the particular. These authors state that we know the conceptual abilities of children at various age levels but do not have an adequate understanding of the process by which young children acquire concepts or of the contributions of adults to facilitate that process.

The differentiation between language growth and conceptual growth in an individual is only theoretical since they are combined in the spontaneous development of the child. However, they may be considered somewhat independently in the construction of an educational program for infants. Five concepts which are considered to be prerequisites for academic learning and which are usually acquired at an early age are suggested: (1) the concept of body image, (2) the concept of spatial relationships, (3) the concept of number, (4) the concept of time, (5) the concept of categorical classification.

Suggestions for Conceptual Training

Concept of Body Image. In his discussion of perceptual-motor-spatial integration Kephart (1960) states that spatial relations and spatial directions develop first in relation to the child himself; only later are objective relations developed between objects. He suggests, therefore, that the child

must develop a concept of body image, a clear picture of how he relates to space. The following are suggestions for helping an infant develop the concept of body image. (1) Place a mirror in front of the infant. Allow him to name the parts of the body. Say, "What is this?" (pointing to hair). If he is non-verbal, say, "Show me your eyes." (2) Tell him to point to or name the parts of the body on a doll and then on himself. (3) Place the infant's hand or foot on paper or have him lie down on a large piece of paper; draw an outline of him with a felt-tip pen.

Concept of Spatial Relationships. Piaget (1963) theorizes that the infant's earliest ideas of space depend upon where the child is at a certain point. A series of developmental stages follow in which he learns to comprehend a single objective space, encompassing objects and persons. As the child develops his concept of space, he learns to differentiate not only spaces but objects in them by their form. Ausubel (1958) writes that form discrimination is one of the earliest conceptual acquisitions of the child. Size discrimination requires the relating of an object to other measures or objects and develops later.

Included in the concept of space are activities for the development of form perception, size perception, spatial relationships and seriation. (1) Train the infant to perceive the form of an object by having him place forms (cylinders, cubes, triangles) in their corresponding holes in the top of a form-box. Teach him to draw geometric figures by using templates and in free-hand drawings. (2) Teach size perception by showing the infant how to place rings graduated in size on a pyramid shaped structure, the largest fitting at the base. Use large and small cookies, cereal pieces, and cardboard shapes (all of the same color to avoid confusion) to teach size. (3) Use nested cubes, poker chip designs, and puzzles to teach the amount of space necessary for placing objects, spatial

relationships between objects, and position in space. (4) Use nested cans and boxes to teach seriation of objects.

Concept of Number. Piaget (1952) writes that ordination and cardination first occur at a global level and are dominated by immediate perceptual experience. The first percepts of number probably involve one in contrast to more than one, i.e., the child develops a percept of many before he begins to develop definite concepts of numbers. Counting is often learned on a rote basis prior to the acquisition of functional number concepts and cannot be considered a product of conceptual development (Ausubel, 1958).

The following activities are suggested to teach the initial stages of number concepts: (1) To differentiate "one" from "many" or "more," place pennies or cereal bits in front of the infant. Ask him for "one" and then for "more" or "many pennies." Show him how to do it by giving him the pennies or cereal pieces first. (2) To teach the concept of oneness give the infant one penny in his own cup and one in yours; continue to alternate placement until all are placed; allow the infant to dole out the pennies. (3) Demonstrate the concept of twoness by holding two pennies in your hand and placing them in a small box; have the child imitate the procedure. Three to five boxes and six to ten pennies may be used. Tell the infant, "Make two in your hand and then put the two in a box; good, now make two again and put them in this box." (4) Threeness may be taught in a similar way. (5) Teach the child to count to ten by rote. Of course, this will not teach him number concepts, but it will make him familiar with the words we use and their progression.

Concept of Time. Piaget (1952) postulates the following stages in the infant's experience of temporal happenings: (1) The child participates in a series of temporal events such as hearing a sound and then turning his head to

find the source. The child may experience a vague feeling of duration intermixed with other vague sensations of effort, need and the like. (2) The child may then have some elementary consciousness of a before and an after in an action-result sequence, such as pulling a string to activate an object. (3) The ability of the child to retain a series of events in which his own action did not directly intervene is a next stage in the experience of temporal happenings. In this case the child recalls an event rather than a past action. For example, the child searches behind a screen to find an object he has seen the experimenter hide there. (4) A further development in temporal awareness is demonstrated when the child is able to recall the events of a more remote past happening, such as remembering that mother put a toy on a particular shelf two days ago. (When the child is asked where the truck is, he points to the shelf.)

Temporal awareness should be stressed throughout the day as a part of the natural sequence of events: (1) The teaching session should follow an orderly progression. Tell the infant, "juice time," "puzzle time," "painting time," "time for teacher to go home" or "time to put away the toys." (2) Point out daytime, morning, breakfast time, lunch time, dinner time, sleeping time. (3) Tell the infant, "I'll see you tomorrow." "When I was here yesterday you showed me your cat." "Today we'll paint."

Concept of Categorical Classification. Ausubel (1958) states that concept formation consists of a process of abstracting the essential common features of a class of objects from a series of situations in which they vary contextually in unessential details, or along dimensions other than the particular ones under scrutiny. The common features are comparable configurations or sets of relationships. The young child classifies experiences in terms of immediately perceived properties rather than in terms of their class membership.

Later, however, categorical classification tends to become the dominant mode of organizing experience. Ordering of experiences and segmenting them into manageable categories is a necessary component of cognitive development and is a prerequisite to academic readiness.

Classification concepts (the ordering of objects and placing them into meaningful categories) may be taught in a variety of activities: (1) Place three or four pictures, all alike but one, on the table in front of the infant. Tell him, "Give me the one that is different," or "Give me the one that doesn't belong there." (2) Place three or four different pictures in front of the infant and say, "Give me the one that is the same as this one in my hand." (3) Cut pictures from magazines. Teach the infant to sort pictures into categories. People, foods, dogs, cats, and birds are easily identified by an infant. Use two categories at first, then three. Tell the infant, "Put all the dogs in the dog house and all the people in the people's house." (Boxes labeled with a picture of a dog and a person represent the houses.) (4) Teach the child to sort chips, blocks, and the like into color categories. Use primary colors at first.

This rationale emphasized the use of sensory-motor materials in a way which would help to promote the language and conceptual development of very young children. The areas chosen as the basis for this structured program of infant education reflect the areas in which disadvantaged children generally perform at a lower level than their advantaged peers. Their general area of strength, motor development, has been used as the most effective mode of presentation. Emerging speech and fine motor skills may be combined to enhance the conceptual development of young children if the activities are presented in a manner which is fun for the teacher or mother as teacher, and the infant.

Infant teaching can be a satisfying experience for both teacher and infant and can do much to avert the deficits which disadvantaged children begin to reflect at about the age of three.

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